

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1 – 6 (Canceled).

7. (Currently Amended) A renal replacement therapy system, comprising: a filter; an arterial blood line connectable to a patient access and adapted to convey blood from said patient access to ~~a~~the filter; a venous blood line connectable to said patient access and adapted to convey blood from said filter to the patient access; and a pump configured to convey blood through said arterial blood line, a sensor to sense pressure in said arterial blood line located upstream of the pump and downstream of the patient access, and a controller connected to receive a pressure signal from said sensor and to control a rate of flow of said pump; said controller being configured to maintain a constant pressure in said arterial blood line by regulating a speed of said pump in response to said pressure signal.

8. (Original) A system as in claim 7, wherein said controller is configured to slow said rate of flow when said pressure drops.

9. (Original) A system as in claim 8, wherein said controller is configured to speed up said rate of flow when said pressure increases.

10. (Canceled).

11. (Currently Amended) A system as in claim 7, wherein said controller is a ~~microcomputer programmed~~configured to compare said pressure signal with a predetermined value.

12. (Currently Amended) A system as in claim 7, wherein said controller is configured such that when ~~resistance to flow in the arterial blood line increases~~said patient access becomes clogged, said rate of flow is slowed.

13. (Currently Amended) A renal replacement therapy system, comprising: a filter; an arterial blood line connectable to a patient access and adapted to convey blood from said patient access to a filter; a venous blood line connectable to said patient access and adapted to convey blood from said filter to said patient access; and a pump configured to convey blood through said arterial blood line, a sensor to sense pressure in said arterial blood line, and a controller connected to receive a pressure signal from said sensor and to control a non-zero rate of flow of said pump between multiple different flow rates such that a constant pressure is maintained, during pumping, in said arterial blood line by regulating a speed of said pump in response to said pressure signal.

14. (Previously Presented) A system as in claim 13, wherein said controller is configured to slow said rate of flow when said pressure drops.

15. (Previously Presented) A system as in claim 14, wherein said controller is configured to speed up said rate of flow when said pressure increases.

16. (Currently Amended) A system as in claim 13, wherein said controller is a ~~microcomputer programmed~~configured to compare said pressure signal with a predetermined value.

~~18~~17. (Currently Amended) A system as in claim 13, wherein said controller is configured such that, when resistance to flow in the arterial blood line increases, said rate of flow is slowed.